Origins

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The Journal of **The Biblical Creation Society**

Editorial:
Is creationism "Science Abuse"?

Origins 49

As I write this, America has just chosen a new president-elect in the person of Barack Obama. At such a momentous time, when so many eyes are turned on Mr Obama to see if he will make sweeping political changes, it is good for us to remember **1 Timothy 2:2**:

"I exhort therefore, that, first of all, supplications, prayers, intercessions and giving of thanks, be made for all men; for kings, and for all that are in authority; that we may lead a quiet and peaceable life in all godliness and honesty."

The secular media, both here in Great Britain and in the United States, have been quick to establish their own agenda for Mr Obama's presidency. *New Scientist* magazine recently called for a cool, rational response to "ideologically and religiously motivated views" – especially that of creationism. What is of utmost importance, they suggest, is that Mr Obama herald the birth of a "new enlightenment". This focused hostility toward the truth actually served to remind me of a *New York Times* bestseller called *The Republican War on Science*, which was cluttering my shelf. This book, written by an American science journalist named Chris Mooney, covers a broad array of issues ranging from stem cell research and climate change to environmental regulation and sex education. Nowhere, however, is more polemic passion expressed than in Mooney's assaults on the so-called "science abuse" of creationists.

It is worth, I think, examining some of the issues raised by scientific-political reporting of this ilk:

First, perhaps, we should consider the issue of authority. Mooney defines science as a process of peer review, hypothesis testing and internal criticism for systematically searching out knowledge about nature and ourselves. It is, he believes, our only true "candle in the dark". This basic assumption must be challenged head on. The Reformer John Calvin began his *Institutes of the Christian Religion* (1559) by dividing all true knowledge into two camps – knowledge about ourselves and knowledge about God. The more true knowledge we gain of ourselves, the more we might be tempted to despair. In a world wholly blackened by the horror of sin, the only true light is Jesus Christ himself. By placing the authority of an institutional process above that of God's infallible and inerrant Word, Mooney opposes the first commandment and champions an idol of the mind.

Second, reporting of this ilk likes to bandy about the interesting phrase 'cognitive dissonance'. A cool and rational appeal to empirical evidence is meant to represent a 'way of knowing' far superior to revelation. In our secular climate, the problem with revealed truth is said to be that one must accept the world-view of the speaker in order to accept the statement. There is therefore no 'outside referent'. The natural world is no longer the final arbiter of what is true and therefore wherever textual revelation and nature disagree, a mental 'perfect storm' is bound to brew within the poor, enslaved fanatic. To this naïve fallacy, we must respond (despite protestations to the contrary) that the natural world *itself* is a clear revelation of the Triune God of Holy Scripture. It is not merely an arbitrary revelation *from* God, nor does it reveal an intelligence of some *unknown kind*. Creation is a divinely manufactured *self-image* of the one, true, eternal God of Holy Scripture (**Romans 1:20**), albeit corrupted from its original perfection by humanity's breach of the covenant.

Third, and finally, whether we live in Britain or America, we have a moral obligation as Christians to be salt and light in this wicked world (**Matthew 5:13-16**). Some of the political abuses of science which Mooney highlights are probably quite true. However, whilst heavenly wisdom, meekness and a fear of God are vital when voicing our scientific opinions, we must never allow ourselves to compromise biblical truth. We must oppose moral perversion in all its forms, however great a veneer of professional respectability it might be provided. If this means bearing the shame of being called power-hungry spin-doctors; deceitful, ideologically driven fanatics; or austere theocratic tyrants, then we must remember that no servant is greater than his Master. The Lord Jesus Christ, as our incarnate Creator, bore this sort of shame (and more) as he stood silently on trial before a mob of angry religious leaders. Despising the shame, he endured the cross, looking toward that joyous day when he will glorify his beloved bride and pour out his vengeance upon the wicked.

Whatever the future holds for American creationists under a new president, whether it be a series of encouragements or disappointments, Christians can rest assured that in the eyes of our Creator God, all the world's nations are but a "drop in the bucket" (**Isaiah 40:15**). Moreover, those who place their final trust in a political saviour will certainly be disappointed, because some two thousand years ago, the most powerful man on Earth became the most powerful man in Heaven. And his coming return from Heaven will herald the birth, not of a new enlightenment, but of a new and perfect world of love. For this express reason, Christian believers from across the globe echo that confident plea of **Revelation 22:20**: "Even so, come, Lord Jesus."

James Powell

Correction to *Origins* 48
In *Origins* 48, we inadvertently left out the copyright ascription to part 2 of Geoff Thomas's article on 'The creation of man'. The following text should have appeared at the end of the article: © Geoff Thomas, 2006.

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Creation in the news

Reiss and the Roots of the Royal Society

In February's edition of *Biologist*, the journal of the Institute of Biology, Professor Michael Reiss – then Director of Education for the Royal Society – wrote an article entitled 'Creationism, Darwinism and ID: what are biology teachers supposed to do?'. In this article, Reiss put the creation/evolution debate in context and highlighted that it should come under the umbrella of "teaching about controversial issues" and "matters of personal significance". He concluded by saying: "Effective teaching in this area can not only help students learn about the theory of evolution but better appreciate the way science is done, the procedures by which scientific knowledge accumulates, the limitations of science and the ways in which scientific knowledge differs from other forms of knowledge" (Reiss 2008). Echoing the carefully reasoned position set out in this paper, Reiss delivered a lecture at the British Association's Festival of Science in Liverpool on 11th September (Smith and Frean 2008). Following this lecture, a handful of Fellows belonging to the Royal Society began a letter campaign to have him sacked. Alluding to the 'black-shadow' of creationism within US society, militant atheist Sir Harry Kroto (one of the main instigators) issued a line that could have been lifted from Master Yoda of Star Wars himself: "The Royal Society does not appreciate the true nature of the forces arrayed against it". Regrettably, the Society's President, Sir Martin Rees, capitulated to the demands of these Fellows and had Reiss immediately step down. Richard Dawkins was reported as saying: "A clergyman in charge of education for the country's leading scientific organisation – it's a Monty Python sketch" (Vallely 2008). Really, Richard? In that case, Robert Merton's collective biography of the Royal Society's early Fellows (produced in 1938) situates the unruly Reiss shoulder-to-shoulder with many other eminent 'goons' of Puritan, Latitudinarian and Anglican credos. It's amazing, in retrospect, how far such a zany bunch have managed to bring the modern world! ■

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Creationism 'contaminates' science festival

At the same science festival in which Professor Reiss encouraged good teaching when dealing with science and religion issues, the British Association for the Advancement of Science also came under attack from militant atheists for staging a play written by sociology professor Steve Fuller, who has previously supported the teaching of Intelligent Design as part of a broad and balanced curriculum. A spokesman from the BAAS defended their decision, noting that it is "appropriate for us to address the issues…and not assume the problem will just go away". ■

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Dawkins on Darwin

Gearing up for next year's Darwin celebrations, this August saw the return of Richard Dawkins to Channel 4 in a new three-part series entitled 'The Genius of Charles Darwin'. Early in the production, Dawkins visited a class of schoolchildren from Park High School in London. Aghast at the 'spark of divinity' firmly lodged in their minds, he broke all the rules of 'procedural neutrality' in trying his best to steer the debate toward his own dogmatic position. Failing to make an impression via this route, he took them on a pilgrimage to the 'Jurassic Coast', to ostensibly let the evidence speak for itself. The fossil which he showed the group seemed to speak of a recent cataclysm – yet this was drowned out by Dawkins' monologue concerning millions of years. By the end of the trip, some pupils had been duly indoctrinated, whilst others said they still believed the Bible. Later in the series, Dawkins noted how evolution implies economic self-interest. The similarities between (fallen) biological systems and economic systems were emphasised, yet a businessman cautioned that there is a risk to this analogy. Perhaps, in light of recent economic events, this caution regarding Darwinian economics wasn't stressed enough. ■

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Did niche construction aid the 'fifth ape'?

According to evolutionary anthropologists, the earliest stone tools are said to date from two million years ago, yet fully intelligent behaviour did not emerge until some 200,000 years ago. This claim has cast doubt upon the 'tool hypothesis' which has long surmised that our powers of intellect were kick-started by the use of stone tools. Now, however, Atsushi Iriki – of the RIKEN Brain Science Institute in Wako, Japan – has proposed a different story. He conjectures that tools were integrated into our body image, thereby acting as a catalyst for the 1.8 million year journey toward a sense of 'self'. At the heart of this hypothesis is the concept of 'intentional niche construction': a mutual interaction between brain and environment where self-awareness allows modification of the environment, whilst this modification, in turn, puts selection pressure on the brain. Of course, what this idea fails to account for is the far greater problem of how fully intelligent hominids, capable of astonishing feats of innovation, could have prospered on our planet for over 200,000 years without progressing beyond basic hunter-gatherer and subsistence farming style technologies. ■

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Living fossil inspires future combat armour

Researchers from the Massachusetts Institute of Technology in the US have recently gained design inspiration for soldier combat armour by studying a 'living fossil' known as the 'dinosaur eel' (*Polypterus senegalus*). Each scale on the body of this fish is composed of three separate layers which form a synergy (combined effect greater than the sum of their parts) to reduce the likelihood of penetration by sharp teeth. The outer layer is like an extremely hard exoskeleton which takes enormous pressure to puncture. The middle layer, by contrast, is able to dissipate energy by deforming. Finally, the inner layer has molecular chains criss-crossing in different directions, so that this layer is equally strong in all directions, preventing cracks from spreading. Intriguingly, the Scriptures note that a three-fold cord is not quickly broken (Ecclesiastes 4:12), whilst creation demonstrates the same principle regarding these remarkable fish scales! ■

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The Michael Reiss affair:

Should creationism be allowed to enter the science classroom?

Sylvia Baker

Professor Michael Reiss, former Director of Education at the Royal Society. From: http://www.ely.anglican.org/parishes/camgsm/Majestas/1999/April.html

The resignation of the Reverend Professor Michael Reiss from his position as Director of Education at the Royal Society over the issue of the teaching of creationism in school science classes has brought the issue to the forefront of public attention. Several major issues are raised by the resignation and the furore that led up to it. On Thursday 11th September 2008, Michael Reiss, a gracious Christian and convinced evolutionist, gave a talk in Liverpool reiterating what he had often said before, that creationist pupils in science classes should be handled sensitively and with respect. Their problems with the theory of evolution should be discussed with the aim of convincing them that their creationist beliefs are wrong. By Tuesday 16th September Reiss had been forced to resign from his prestigious position, even though what he had said had actually represented the official line taken by the Royal Society on the matter.

The resignation had been brought about by two factors. One was the hysterical and sensationalist response of the media. Several newspapers announced, with big banner headlines, that a leading scientist was advocating the teaching of creationism in science classes. This was inaccurate and Reiss and the Royal Society itself moved quickly to say so. The second, probably more decisive, factor was a letter written to the Royal Society by three of its Fellows, all Nobel laureates, calling for Reiss's resignation, at least partly on the grounds that he is a clergyman. It seems that they were not simply objecting to how the media had distorted Reiss's remarks but to what he had actually said. Once Reiss had been forced to resign, the media began to change its tune. Even Richard Dawkins was quoted as saying that to demand the resignation was to go too far. It began to look as though Reiss had been the victim of a bullying campaign by those with an atheistic agenda and several journalists and commentators expressed the view that the Royal Society had damaged its own reputation.

The controversy centred around the teaching of creationism in science classes. It seems that some believe that for the subject to be mentioned at all is anathema. By this creed, pupils who do not believe in evolution are presumably not even allowed to say so. They would certainly not be permitted to question the evidence. Judging by the comment in the media in the wake of the resignation, this picture is beginning to dawn on more and more people, with a concomitant sense that this cannot be right and that Michael Reiss was actually advocating something perfectly reasonable. If science teachers are to be able to respond to creationist pupils, reckoned by Reiss to amount to 10% of all pupils, they will need to become much better acquainted with the creation/evolution debate. The results of such a process could be extremely interesting. ■

Postgenetics: ‘junk DNA’ is no more

Nancy Darrall

From 1972, the British agency, GCHQ, the successor of the organisation which broke the German encryption codes in World War II, was the workplace of information scientist Dr Nick Patterson. Later in his career Dr Patterson accepted the position of cryptography specialist at the Center for Communications Research, part of the Institute for Defence Analysis in Princeton, USA. In 1993, however, he decided to apply his knowledge specifically to Renaissance Technologies, a hedge fund, which made trades based on predictions of daily stock price changes, using statistical methods of analysis similar to those used in code breaking.

By 2000, Dr Patterson was ready for a greater challenge. After some deliberation, he decided he would attempt to work on “the most interesting and complex data sets to be found”. “It had to be the biology people,” he quipped. Following a meeting with a former colleague in cryptography, he relocated to the Whitehead/MIT Center for Genome Research. The activities of that institute have been referred to as “decrypting genomes”. Much the same as in the science of cryptography, this role involves pattern recognition and mathematical modelling according to an “unsupervised pattern-discovery method”.

Why recount this short biography of Dr Patterson? Primarily because here is a man with a well-honed instinct for those data sets which contain specified messages and those which contain apparent junk. What is his comment about the genetic code? “It’s a very big message.”

Bioinformatics is a branch of the life sciences which studies biological data through the use of computerised sequencing tools. Analyses of genomes to find useful information involves using basically the same tools of pattern recognition as were used to break enemy codes in the 1940s. Maybe the only difference is that there was no scheme to encrypt the DNA code! ‘Big Blue’ IBM is also in on the game, using the same data mining technique of “pattern discovery”. Ajay Royyuru, head of the Computational Biology Center at IBM Research sifted through approximately six billion letters (nucleotides) in the non-coding or so-called ‘junk’ regions that do not code for proteins. He concluded that ‘junk’ DNA had a purpose, probably connected to the way cells function. John Bodnar and his colleagues went further: “The non-coding DNA in eukaryotic genomes encodes a language which programs organismal growth and development.”

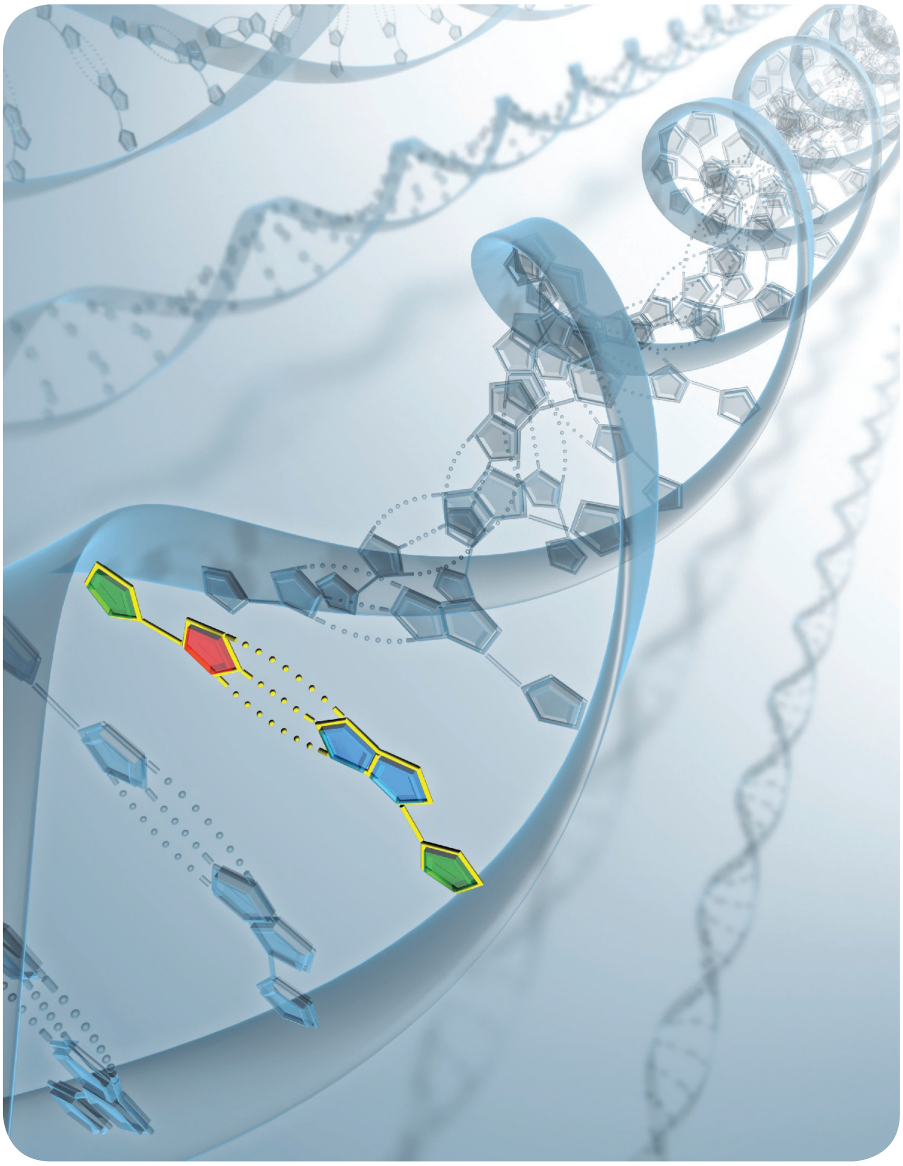
The world of genetics has moved on from counting protein-coding genes. The shock when the number of protein-coding genes in humans was announced reverberated through the scientific press to the daily newspapers – only 25,000 to 30,000 genes compared with 17,000 for a fly and 6,000 for bacteria. Worst of all, a small plant, *Arabidopsis* had about the same number of genes as a human! Suddenly research into ‘junk’ DNA, better known as non-coding DNA, became respectable. There is a growing awareness that counting the different types of bricks and other building materials will not help one to know how to build a house; we need to look at how the raw materials are put together. The architect’s plans and the foreman’s instructions are more important.

How DNA builds proteins

A gene is usually defined as a sequence of DNA base-pairs, or nucleotide pairs, which code for a protein. Some genes, however, code for RNAs rather than proteins, and the concept of discrete genes is now widely questioned. Adjacent to the gene can be other sequences that are regulators of gene expression. The DNA sequence of a gene translates into a messenger RNA strand which, when edited, passes out of the nucleus into the body of the cell. Here, ribosomes attach to the messenger RNA strand and translation begins. The ribosomes move along the messenger RNA molecule, rather like cars moving along a motorway, and ‘read off’ the code to recruit a long string of specific amino acids, the building blocks of polypeptides, such as proteins.

The building site – or how the proteins are assembled

Scientists believe that fewer than 2% of our genes code for proteins. These proteins are equivalent to the building materials for a new house – to construct, for example,



The double helix structure of DNA. © Kiyoshi Takahase Segundo, www.istockphoto.com

> Scientists believe that fewer than 2% of our genes code for proteins. These proteins are equivalent to the building materials for a new house – to construct, for example, an extension, or a garage, or a block of flats.

an extension, or a garage, or a block of flats. Firstly, the DNA is copied and edited to make a strand of messenger RNA. Ribosomes, like the labourers on a building site, then attach themselves onto the messenger RNA strand and protein building gets underway.

Now the foreman will tell those labourers where to work on the building site, and he also controls their work by only providing the materials for the jobs that need to be done. Living cells have both types of management systems.

Firstly, cells 'know' where they are in the body and this affects which genes are expressed. On the building site, a bricklayer uses cement between the bricks, but knows that on the outside of a building he will need an additional layer of pointing to weatherproof the wall. Now, the DNA is the same in every cell in the body, but we know that certain small sections are switched on or off to act in the same way as postcodes on letters (to briefly switch metaphors). Just as our postcodes are not random but systematic – e.g. M for Manchester, which is then subdivided into increasingly small areas relating to districts of the city – these patterns of gene activation are also systematic. Cell location is described in terms of position in the body from front to back (rostral to caudal), from near the centre of the body to the extremities (proximal to distal) and near skin surface or internal. These 'postcodes' in the body control gene expression, for example, hair growth: skin tissues in the palm of the hand do not produce hairs, whereas on the scalp they do.

Secondly, only necessary building materials are provided and instructions are given about the size of the wall and other features that are needed. In the cell, there is an elaborate system of 'stock control' to regulate the types and levels of messenger RNA that reach the ribosome.

Just as stock control on a building site involves only ordering the necessary materials, so production of RNA from protein-coding genes can be switched on or off at the transcription gateway. A small handful of initiation sequences mark where transcription will begin and these are located in the three-dimensional structure of the DNA helix. They act as a critical gateway controlling this first stage in protein supply to the cells. The gateway plays a crucial role in tissue differentiation during development: patterns of gene activation are largely the same within tissue types.

Delivery schedules, delays and problems at the site all affect the way the foreman's plan for a building project progresses. Similarly, the amount of RNA transcribed from the DNA and the length of time it survives in the cell act as controls to repress or promote the manufacture of a protein. A whole variety of micro-RNAs, transcribed from non-coding DNA, perform these functions (Rinn *et al* 2006). They can bind to messenger RNA and prevent the start of translation or inhibit translation in progress, so affecting the amount of protein produced. Some are appropriately called 'small interfering RNAs'. Amongst other roles, micro-RNAs help coordinate immune responses to infection.

Other control pathways involve micro-RNAs activating regulators which

DNA is a molecule with a message. © dra schwartz, www.istockphoto.com

are found on the DNA chain near protein-coding genes. Once the regulator is activated the gene can start transcribing the messenger RNA. Micro-RNAs can also add 'labels' to direct the messenger RNA so that protein production occurs in particular domains of the cell. In these examples, we see a second higher level of control, rather like the site manager ordering materials and then the foreman arranging distribution from store.

Now the site manager and foreman work to the site plans and architect's design. Similarly there are a whole range of controls on the action of these micro-RNAs, including transcription, assembly and need for partner proteins, before they can function to suppress, activate or refocus activity. This constitutes a whole third layer of management control! In fact, where cancerous tissues are found, micro-RNAs are out of control with grossly elevated levels of gene expression.

The metaphor of the building site is an imperfect but useful analogy to help us understand the immense complexity of protein production and regulation. It is over fifty years since Watson and Crick elucidated the structure of DNA. Why such little progress since that time? Non-coding areas of DNA were dismissed as 'junk', leftovers from evolution, hardly a topic for research. However, once the results of the human genome project were out, interest in the 'junk' suddenly became respectable as people wanted to understand how so few genes could produce such complexity. Interest exploded in looking for dysfunctional areas in the 'junk' underlying a variety of cancers, in order to develop new types of treatment. Non-coding DNA is now searched for markers for heritable diseases, from dementia to learning disabilities and autism. Scientific bodies are officially abandoning the term 'junk' and so should we. With at least three layers of control known to be regulating the quantity, location and timing of protein production, it is time to recognise the immense complexity and specificity of this system. Take away the controls and the result is cancerous growth. Put the controls in place and acknowledge the irreducible complexity of the process, and the implication that it requires a grand architect for its design is compelling. ■

> **"Such an arrangement would resemble the advanced information-processing systems supporting network controls in computers and the brain."**
>
> **"Observations suggest…most of the human genome is not junk, but rather is devoted to an advanced and highly parallel genetic operation system transacted by regulatory RNAs."**
>
> **Professor John Mattick,**
> Institute for Molecular Bioscience, University of Queensland, Australia.

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> …the implication that it requires a grand architect for its design is compelling.

Beware the Siren voice of Intelligent Design

Reader's Viewpoint

Andrew Cullen

In the last few years a discipline known as 'Intelligent Design' (ID) has entered the public domain. Its proponents regard it as a scientific discipline concerned with identifying empirical evidence in support of an intelligent agent (which may or may not be the Christian God) acting beyond the blind and directionless laws of nature. Its opponents regard it as an attempt to get creationism into the classroom 'by the back door'. Whether or not this accusation is true, on the whole creationists have received ID very favourably, and would support its introduction to the science curriculum.

In this essay I want to challenge the assumption that ID is good news for creationists. I want to dispute the arguments put forward in favour of ID. I will argue that ID should not properly be considered as science, and that creationists would therefore be better to distance ID from 'creation science' as far as possible. This is *not* to say that the world was not intelligently designed; simply that the design argument belongs in philosophy not science. ID presents just the sort of 'God-of-the-gaps' type of argument that creationists have spent years trying to get away from.

> “
> I want to challenge the assumption that ID is good news for creationists. I want to dispute the arguments put forward in favour of ID. I will argue that ID should not properly be considered as science, and that creationists would therefore be better to distance ID from 'creation science' as far as possible.

Is Intelligent Design science?

Let us first, however, consider the argument in favour of ID-as-science. It is claimed that the recognition of intelligent agency does have a place in scientific discourse. The example normally given is that of the archaeologist who has a set of techniques for working out whether, for example, a stone artefact has been shaped by intelligent agency for a purpose (e.g. as a tool), or whether it just became a particular shape by natural causes of erosion and abrasion.

This is correct, but there is, I think, a fundamental difference between the reasoning process of the archaeologist in the above example, and the reasoning process that is required to consider ID as science. The archaeologist is dealing with two sets of stones: Set A is the set of stones that have been shaped only by natural forces; Set B is the set of stones that have been shaped by intelligent agency. The archaeologist coming across stone *x* employs a variety of different techniques to establish whether *x* belongs in Set A or Set B.

This is quite different from what the ID advocate is dealing with. When investigating biological systems, for the ID advocate Set A is empty. There are no examples (if ID is correct) of a biological system that arose without any intelligent agency. We therefore cannot compare the members of Sets A and B to determine what the differences are between them, as the archaeologist can, and thereby establish criteria for judging that a biological system belongs in Set B rather than in A. Intelligent Design cannot therefore reasonably be compared with disciplines such as archaeology or forensic science in terms of the inference of intelligent agency.

But what about phenomena such as irreducible complexity? Surely these scream out the need for a designer? Perhaps. But can we prove it? Science is about making observations and conducting tests, and verifying or falsifying our hypotheses. We do this, for example, in geology; if we observe that a rock lacks the key features of having been laid down under water, we might question our hypothesis that it was laid down in the Flood; or if we observe that a rock contains excess helium, we might question the hypothesis that the radioactive decay rate has remained the same over time. Creation geology, therefore, is genuinely scientific, since we can subject our hypotheses to scrutiny, and the data may force us to change our hypotheses.

Can the same be true with irreducible complexity? Can we use the *data* to say that an irreducibly complex biological system *couldn't* have arisen by a set of chance processes? The various parts may have arisen with different functions, but then, being already present, were incorporated into a single function.

Unlikely, perhaps? But can you tell *how* unlikely it is? Can you put a number on the probability? If you can't, then the ID argument that, "It's so complex it *must* have had an intelligent designer," is no stronger than the riposte that we can't know everything that's happened in the past and it's possible to conceive of how it could have arisen by chance.

Moreover, how sure can we be that no natural processes will be discovered in the future that help explain how particular seemingly irreducibly complex functions could have arisen by chance? The ID argument does, in fact, come down to a 'God-of-the-gaps' approach – "I can't see how it could have happened by chance so it must require an intelligent agency."

Can Intelligent Design be a part of creation science?

Before you write me off as a sceptics' apologist, let me raise another reason why creationists should be particularly cautious about citing irreducible complexity as firm evidence of intelligent agency. This is the observation that many highly complex biological systems are required either for attack or defence: functions that would presumably not have been required when the creatures were first created. We might consider the bombardier beetle, which uses a complex mix of chemicals, expelled from its body with very precise timing, in order to cause an explosion and deter a predator from eating the beetle. How did this function arise, since such violence was presumably not required pre-Fall? Unless we opt for an *ad hoc* and unbiblical hypothesis that God recreated or redesigned many creatures after the Fall, we are forced to the conclusion that defence-attack structures such as this either developed after the Fall, or modified existing structures that had a different function prior to the Fall. For a fuller discussion of this point see chapter six, 'How did bad things come about?' in Batten *et al* (1999).

If creationists require that natural processes must have had a significant role in forming and shaping these highly complex biological structures, we can hardly deny evolutionists the right to appeal to the same possibility. If we try to claim these systems as evidence of design we may find we have shot our own fox.

How should creationists regard Intelligent Design?

Another reason that creationists should be cautious about ID is that many ID advocates are actually evolutionists. They are not denying evolution or a billions-of-years age for the earth, but are simply saying that there is an intelligent power guiding the process of evolution. Since ID and creationism are currently linked in the public mind, I think this is harmful to the creationist case. If ID is eventually successful in getting established as a discipline in secular society, I don't think creationists will have done themselves any favours by trying to tag along in its wake. Those of us who are passionate about creationism are so not simply because it is true, but because of the theological implications of allowing death before sin, of denying a global Flood or of saying that the Bible's record of history can't be trusted. I believe it is important that we stand up for this distinctive, rather than try to attach ourselves to a philosophy that undermines (or at best does not support) those beliefs.

Further, since ID is on dodgy ground scientifically, I think there is merit in creationists pointing this out. If we want to stand for high standards of science, we undermine that position by allowing a poor form of science to speak for us. It is rather like preparing for battle by selecting one's oldest, rustiest sword with a broken hilt. There is much genuine scientific data that really supports the creationist case. We should be bringing that to the fore, not relying on a weak and speculative ID argument. If we point out the scientific problems with ID, this would undermine the secular case that creationists are not interested in genuine science.

In conclusion, then, I have argued that 'Intelligent Design' is not able to define criteria for design that would make it verifiable or falsifiable, and that it is therefore not properly science in the way that other creation science is. Irreducible complexity is an inconclusive argument, and may even work against creationists when we consider that defence-attack structures must have arisen post-Fall. Tying creationism to ID will actually serve to undermine creationism in the long-run, both theologically and scientifically. In my view creationists would make themselves a more credible case by ditching ID, pointing out the problems with it, and focusing instead on stronger scientific evidence for the creationist case. ■

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Andrew Cullen graduated from St John's College, Cambridge, in 2005, having studied Natural Sciences and Theology. He is now a Religious Studies teacher.

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Intelligent Design and creationism: A response to Andrew Cullen

David J. Tyler

In this article I want to argue that Intelligent Design should not be regarded with suspicion by creationists – but rather considered to be absolutely essential for our thinking. The consequences of not engaging with these issues are that we will be deficient in our understanding of science and the philosophy of science, and that our defence of design in nature will lack rigour.

A distinguishing feature of physics is the way conceptual models of the material world are built and then tested, validated and refined. Often, real breakthroughs in research come when the theoretical models are found to be inadequate and are replaced by new alternatives. An example is the way combustion was understood: one model considered all flammable materials to contain a substance called phlogiston, but this was replaced by understanding combustion as a chemical reaction between a material and an oxidant. Other significant changes in conceptual models have been witnessed in our understanding of light (waves and particles) and energy (classical and quantised systems). Physicists realise that specific conceptual models are 'negotiable': they are of human origin and not part of the foundations of science.

Ultimately, even these conceptual models build on metaphysics: fundamental convictions about the nature of reality. Before the time known as the Scientific Revolution, Aristotelian metaphysics was pervasive in influencing thinking about how the world worked. For example, the most fundamental way of looking at the material world was to identify its essence or Form, and objects were moved by inherent tendencies to realise their Form. Thus, rocks fall down-slope because their natural place is in the direction of the Earth's centre. Ultimately, this concept ensured the persistence of geocentricity for many years after Copernicus' famous book. Newtonian science replaced this with the material world considered as a mechanism, with every object attracting every other object according to the law of gravity. Initially, Newtonian physics was an expression of theistic science, for Newton linked the Christian doctrine of God's providence to the operations of natural law. Later, with the influence of the Enlightenment, the Newtonian mechanism became Deist (God started the machine and let it run autonomously) and then Secularist (agnostic or atheistic) so that God became irrelevant to science. Whilst the mathematical models were unaffected, the conceptual models underpinning the physics saw dramatic changes.

Design recognition

These considerations bring us to the topic of design. Is design recognition part of science? We have only to look at the disciplines of archaeology and forensic science to answer "yes". In these disciplines, it is normal practice to make design inferences based on evidence. Was the stone artefact formed by human skill as a tool, or was it shaped by natural processes? Was a particular incident an accident or was it planned? Science cannot study every aspect of design (for example, the motives), but without methodologies for making design inferences, it will be blind to important aspects of reality. To get some rigour into thinking about design inferences, we need to turn to the research of Intelligent Design scholars.

What about design in nature? What is stopping us applying the same principles? The only significant objection to doing this was originally offered by the philosopher David Hume. We can infer design where the designers are human because we know what human design looks like – but we do not know what characterises God's design. To understand this objection, we need to recognise that Hume was an Enlightenment thinker, whose commitment to empiricism was total. We can only know things through our senses, they insisted (ruling as ineligible any appeal to revealed truth).

ID theorists have shown that human design features (particularly arguments invoking complex specified information) are utterly different from the features arising by chance or by natural law. Furthermore, these design features are found in profusion in the natural world, whether we consider the fine-tuning of fundamental constants or the exquisite systems exhibited by molecular biological nanomachines within the cell. The whole research discipline of biomimetics has emerged based on the recognition that designs in nature are far better than the designs that human engineers have devised. These arguments allow design inferences to be considered as hypotheses within science. Nevertheless, creationists can go a step further, because we know from revelation that mankind is made in the image of God. We are creative because he is creative. We design because he designs. So Hume's objection has no validity at all when science is based on Christian foundations. Creationists are not philosophical empiricists: we seek to ground our thinking on the Bible's revealed truths.

Objections to Intelligent Design

There are generally two distinct reactions to ID. The first is to say design inferences are not part of science, because science does not 'do God'. Science looks for natural causes for all phenomena and intelligent causation is a no-go area for science. The second reaction is to declare that complex specified information, and every other indicator of design, can be explained in evolutionary terms.

The first of these arguments is entirely metaphysical. It is not about the practice of science but it relates to conceptual models and the working principles by which scientists operate. This response invokes a definition of science that is novel and wrong. Science is concerned with developing models for the natural world, and there is no rational reason for excluding intelligent causation from science. As we have seen above, if it is argued that we accept intelligent causation from humans but not intelligent causation if the Agent is God, then this is not a scientific issue but a metaphysical one. It is done on the grounds that 'we know that God has nothing to do with the origin and operation of the natural world'. This is a blatant intrusion of atheistic materialism into science, and all thinking Christians should protest strongly. It is a betrayal of our Christian heritage not to protest. We owe the leaders of the ID Movement a debt of gratitude for their clear analysis and powerful arguments on these issues.

The second argument is more interesting, because it claims there are evolutionary explanations which negate the need to make design inferences. This is where evolutionists have an opportunity to show that they can produce complex specified information (CSI) via natural causes. To date, their scientific responses have been singularly unimpressive. Most of them are Darwinians, but there is no evidence that Darwinian mechanisms have produced anything remotely like CSI. Here again, we owe a great debt to the ID Movement, because many of them have direct research experience of the systems under discussion and have gone on the offensive in the way they have rebutted evolutionary scenarios that have been proposed.

Is Intelligent Design a Siren voice?

This seems to be the right place to interact with the views expressed by Andrew Cullen. First, the archaeologists analogy. We would all do well to reflect on the Design Filter methodology articulated by Bill Dembski. There are three distinctive causal mechanisms – Law, Chance and Design. Chipped materials may have fractured along a zone of weakness created by the molecular structure of the rock. This would be explained by Natural Law. Other chips may be explained by the action of frost or random impacts. This is an explanation involving Chance. Other fractures imply repeated impacts from a specific direction and involving a particular load, and these are best explained by Design. The Design Filter concept broadly considers Law as the first filter. If the data falls through that, then it meets the next filter of Chance. If it falls through that, it goes on to the third filter of Design. If it falls through that also, then the whole process needs to start again – because there are no other causal mechanisms to consider. Secularised science has just two filters: Law and Chance. Everything must be caught by those. ID frees science from force-fitting everything into the world envisaged by materialists, whilst allowing the materialists every opportunity to prove their case by showing nothing falls through to the Design filter. Unfortunately for them, the natural world is full of cases warranting intelligent causation. For the health of science, we need ID!

> ID frees science from force-fitting everything into the world envisaged by materialists, whilst allowing the materialists every opportunity to prove their case by showing nothing falls through to the Design filter. Unfortunately for them, the natural world is full of cases warranting intelligent causation. For the health of science, we need ID!

If we accept 'falsifiability' in the way Andrew Cullen argues, then it is very unfair to target ID as unfalsifiable and as 'God-of-the-gaps' thinking. Darwinism and all other theories of origins fall under this axe! Darwinism has not delivered what it claims, yet it rules among the scientific intelligentsia. In effect, Darwinism is a 'mechanism of the gaps'. Profound gaps exist and we hear lots of claims that Darwinism can bridge those gaps, but there is no substance. The way some Darwinists argue, their theory is unfalsifiable because it must be true as a matter of logic – there is no alternative for building complexity.

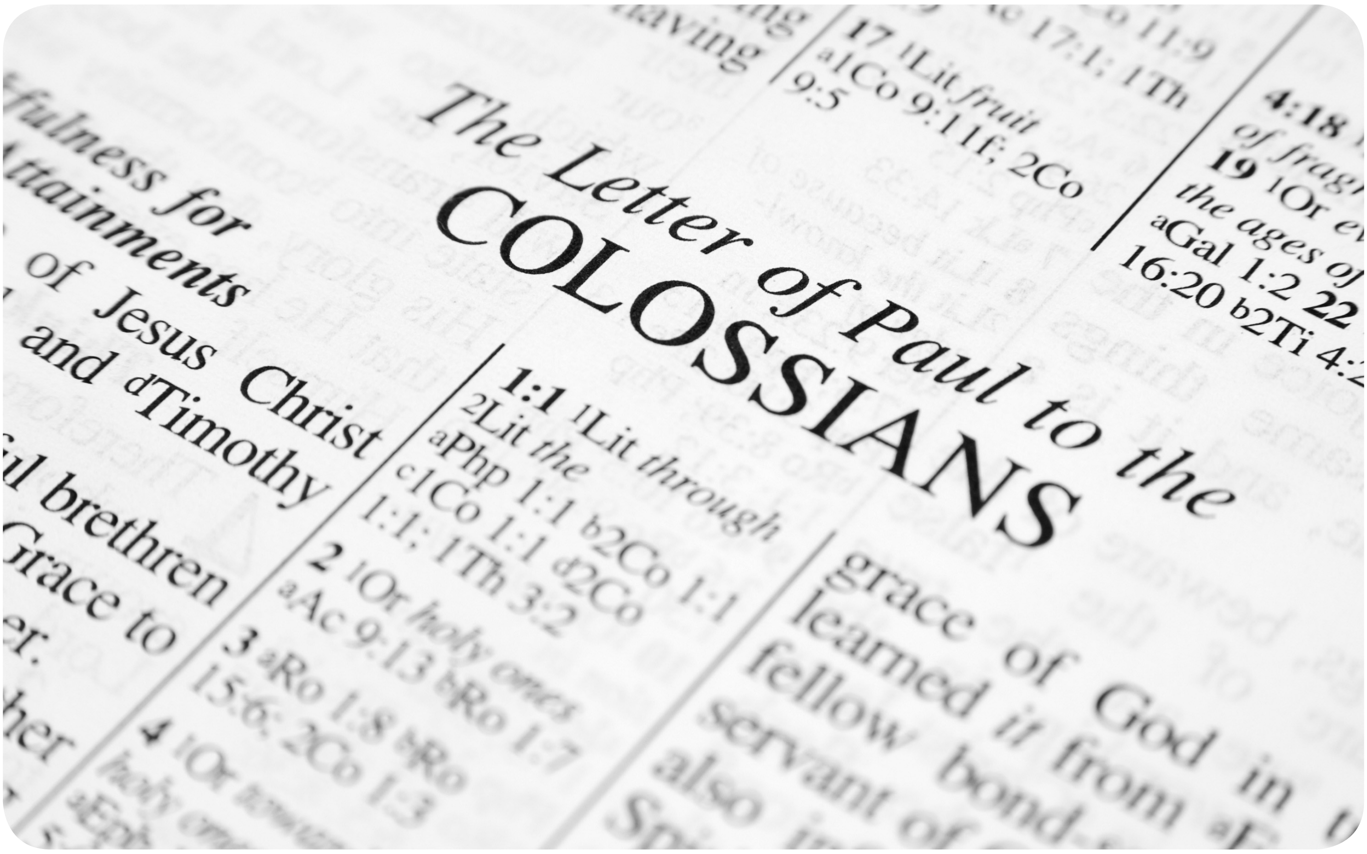
We should recognise that ID is a 'big tent' movement. The key issue for science concerns evidences for design in the natural world. The key issue for metaphysics concerns the subversion and secularisation of science. There are people from many different backgrounds with a common interest in these issues. But we should not expect ID to make statements about the age of the earth or the cosmos, the Fall, bad design, the Genesis kinds, and the Flood. This is not what ID is about and association with ID advocates who differ from us about these things should be a matter of personal choice and calling. It does not justify ditching ID as undermining creationism. The essential arguments of the ID Movement are ones that creationists can endorse and build on. ■

David Tyler has an ID blog at http://www.arn.org/blogs/index.php/literature.

Created by him and for him:

A study in Colossians 1:15-17

Peter Hitchcock



The Letter of Paul to the Colossians. © Stanislav Fadyukhin, www.istockphoto.com

The Christian doctrine of creation is widely under attack by today's secular media. The launch in Britain in September 2006 of the organization *Truth in Science* was a clear case in point. The group seeks to present creation-based alternatives to the evolutionary teaching of biology in British secondary schools. Its purpose was immediately attacked inside and outside Parliament as hostile to mainstream science and a dangerous attempt to indoctrinate Britain's schoolchildren. In fact this was yet another example of a secular mindset unable to handle God's truth and resorting to ridicule and distortion in response.

In an attempt to deny God his rightful place, Christian teaching about creation may be mocked and belittled today. However, for people who have accepted God's truth as revealed in the Bible, what God has to say about how and why he created the world has huge implications for our lives. The doctrine of creation is a basic and fundamental Christian belief, yet too often it remains in the back of our thinking, having little impact on the way we live. That God created all things is not only something to be debated and argued for by Christians, although that is important. It is also as important that the implications of creation be lived out by Christian men and women. For when we grasp that God is our creator this truth has amazing and fundamental implications for our lives.

The apostle Paul sets out the teaching about creation like this in the Letter to the Colossians:

> *"He is the image of the invisible God, the firstborn over all creation. For by him all things were created: things in heaven and on earth, visible and invisible, whether thrones or powers or rulers or authorities; all things were created by him and for him. He is before all things, and in him all things hold together."'* **Colossians 1:15-17 (NIV)**

These verses, vv.15-17, teach us about the how and why of creation, helping us to reflect on the huge implications creation has for our lives. Paul declares Jesus here to be the supreme Lord over all creation. Verse 15 says, *"He is the image of the invisible God, the firstborn over all creation."* This does not mean the first to be born or created, for Jesus is eternally God, equal with the Father and the Holy Spirit. That Jesus is the firstborn means he is pre-eminent, the supreme Lord over all creation. Verse 16 tells us how he is supreme, *"all things were created by him and for him"*.

Why does Paul feel the need to write this to believers in Colosse? Why does he need to emphasise that Jesus is Lord of all creation? The church in Colosse had been planted by Epaphras, one of Paul's associates; Epaphras was a native of Colosse and after his conversion he had taken the gospel there (Colossians 1:7). But this young church had been targeted by heretics. There were the Judaisers, who were preaching that to be a genuine Christian you needed to observe certain Jewish ceremonies as well as believing in Christ. There were also the Gnostics who claimed there was more to know and to experience beyond faith in Christ.

With these false teachings being promoted, therefore, there was a very real danger that, for the believers in Colosse, Jesus Christ was no longer central to their faith. Epaphras had travelled to visit Paul in prison in Rome and told him of the difficulties back in Colosse. In response Paul wrote the Letter to the Colossians in order to address these issues. Paul's burden and desire for them is summed up in Colossians 2:6-7: *"So then, just as you received Christ Jesus as Lord, continue to live in him, rooted and built up in him, strengthened in the faith as you were taught, and overflowing with thankfulness."* Paul shows them that faith in Jesus is all that they require. They do not need religious rituals or secret knowledge, for they serve one who is the supreme Lord and King over all things. He is all they need. In Colossians 1:15-17 Paul proclaims that Jesus is supreme over creation; he is the King of all creation. In 1:18-20 he declares Jesus as supreme over his church, his new creation. The focus of this article is Jesus' lordship over all creation.

We notice two things from these verses:

1. Jesus is Lord and King over all creation because all things were created by him.

Colossians 1:16 says, *"by him all things were created: things in heaven and on earth, visible and invisible, whether thrones or powers or rulers or authorities."* Jesus is no less than the creator God. Because they were tempted by heretics to sideline and belittle Jesus, the Colossians needed to hear this. Right at the dawn of time when God created the heavens and the earth, and the earth was formless and empty, and darkness was over the surface of the deep, and the Spirit of God was hovering over the waters, the Father created through his Son, Jesus. That is why in Genesis 1:26 God says: *"Let **us** make man in **our** image."* Why is there this use of the plural form? The answer is that God the Father is talking through his creation plans with God the Son and God the Spirit. The apostle John restates the same truth in simple but profound words at the start of his gospel: *"In the beginning was the Word, and the Word was with God, and the Word was God. He was with God in the beginning. Through him all things were made; without him nothing was made that has been made"* (John 1:1-3). It was through the supernatural power of the Word that God spoke matter into being. John makes clear that the Word is Jesus Christ. So John is saying that God the Father created through God the Son. In the same way Paul writes to the Colossians, *"by him all things were created."*

In the momentous days of creation in Genesis 1, we see God the Father creating through Jesus, the Son:

On **day one**, before the creation of the sun, it was he who spoke into the darkness and created light by the raw power of his word and the glory of his being.

On **day two** it was he who formed the vast expanse of the sky.

On **day three** it was he who commanded the dry land to appear, separating sea from land. He created countless different types of vegetation, trees and plants of all shapes and sizes, with fruit in abundance.

On **day four**, at a million times bigger than Earth, at 6000 degrees centigrade, it was he who created the Sun, so powerful that Earth needs only one billionth of its energy. He also made the Moon and the stars. Astronomers estimate that there are 10,000 million million million stars, the nearest of which is 24 million million million miles away (Blanchard 2000, p 246). Psalm 8:3 describes them as *"the work of your fingers"*.

On **day five** it was he who created sea creatures to fill the sea. Today we know of 29,000 different species of fish in the world's oceans; from the 16 m (51 ft) whale shark to a 7 mm (just over 1/4 of an inch) stout infantfish. On day five he also created the birds to fly in the sky. Depending on how you classify birds it is estimated that there are between 8,800-10,200 living bird species, ranging in size from the tiny hummingbird to the huge ostrich and emu. All of them reflecting the diversity built into the creation from the beginning by their Maker.

On **day six** it was he who made land animals: livestock and wild animals. There are around 5,500 species of mammals and 925,000 species of insects, although estimates of the total number of insect species, including those not yet known to science, range from two to thirty million, with most authorities favouring a figure midway between these extremes. All of them expressing the creator's love for diversity, variety and beauty.

On **day six** it was he who also created us, male and female, in his own image, to rule over his creation. C.E.M. Joad, the writer and broadcaster, once famously said: "The average human body consists of enough fat for seven bars of soap, enough iron to make one medium sized nail, enough sugar to sweeten seven cups of tea, enough lime to whitewash one chicken cage, enough phosphorus to tip 2,200 matches, enough magnesium to provide one dose of salts, enough potash to explode one toy canon and enough sulphur to rid one dog of fleas" (Blanchard

Created by him and for him.
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2000, p.312). That might seem to make us as men and women quite ordinary and unremarkable. In fact God created us as possibly the most complicated organism on the planet, made up of 10,000 billion cells (Blanchard 2000, p.312). But for all the wonder of the human body, the most sensational thing about us is that God made us in his image, the pinnacle of his creation. To be made in God's image is to be like him. As he is the King and Ruler of all creation, so he has made us rulers of creation under him. So we read in Genesis 1:26: *"Then God said, 'Let us make man in our image, in our likeness, and let them rule over the fish of the sea and the birds of the air, over the livestock, over all the earth, and over all the creatures that move along the ground.'"* Made in his image we have the ability to look at the vast array of God's creation and be overwhelmed. God made men and women with the unique capacity to worship him, our Maker.

There is something about God's creation that makes us want to burst out in praise to God. The way in which we respond will be different for different people, for God has wired us uniquely: a glorious sunset, a panoramic view, a clear night sky, a majestic tree, an intricate flower, the structure of a leaf, an insect under a microscope, a baby animal. We respond to the natural world in a way that reflects the fact that we are made to be worshipping beings. This response goes beyond mere awe and wonder and leads us to the worship of God himself. Psalm 95:6-7 commands and invites us: *"Come, let us bow down in worship, let us kneel before the Lord our Maker; for he is our God and we are the people of his pasture, the flock under his care."* One of the sound-bites of heaven that has reached us on Earth through the Book of Revelation is: *"You are worthy, our Lord and God, to receive glory and honour and power, for you created all things, and by your will they were created and have their being"* (Revelation 4:11). Faced with the glory of God in creation and realizing in the gospel that all things have been created through Jesus, worship and submission to him is our only appropriate response.

Let us return to our text in Colossians chapter one. The believers in Colosse were under pressure to turn to religious ceremonies or mystic knowledge and so to sideline Jesus. Paul reminds them who Jesus is and that he is the supreme Lord over all creation. Paul's message is that back at the beginning of time God the Father created through God the Son. It follows that Jesus is no less than the creator God and worthy of all worship, as creatures are to give honour and service to their creator. As Paul says to them in Colossians 2:6: *"just as you received Christ Jesus as Lord, continue to live in him."* If we can grasp just a tiny part of the majesty of God in creation as he forms the universe through Jesus, we will bow in worship and submission to him. Just as we received Christ Jesus as Lord, we will be motivated to *continue to live* under him as Lord.

The second thing we learn from these verses is how a life of worship and submission, living with Jesus as Lord and King, will be shown.

2. Worshipping and submitting to Jesus as Lord means grasping this: if all things were created *by* him, then all things were created *for* him.

That is what Paul says at the end of verse 16: *"all things were created by him and **for him**."* Paul stresses that Jesus is the creator and that everything he created he created for himself! He created it for his own glory and praise! If any of us were to act in such a way it would be the height of pride and arrogance. But God can create the world, the cosmos and everything in it, for himself, for his own praise and glory, without a hint of pride and arrogance. Creating all things for himself is totally appropriate. When God created he created from nothing, all things come from him, all things belong to him. It is he who is God and not we. He is the only creator not the created one. He is worthy of glory and praise. It follows that it is right and proper that his creatures worship him and live with him as Lord and King. This is who God is.

As Christians we know and believe this in our heads. However working this out in our lives can be difficult for us. For there are times in our Christian lives when we actually behave as if we were at the centre of the universe. We may not like to admit it but there are times when we think and behave as though the world revolves around us. Although Paul writes, *"all things were created by him and for him"*, our attitudes in practice can betray our man-centredness. Through the media, the role models of our generation and the expectations of our peers, this man-centred message is preached passionately today. 'Life is about us, our needs, our wants and our desires.' The biblical reality is that the centre is elsewhere, it is in God, in Jesus, our creator.

Living as though we were the centre of the universe is as inappropriate as turning up as a guest to a wedding and expecting to be the focus of attention and to take the spotlight off the bride and the groom. They are rightly the centre of interest and concern and the other guests go along for their benefit, not the other way round.

God is at the centre of the universe. We are here for his glory, not our own. That was the very reason he created men and women, for his own glory. He was not in any way lacking before he made us. He did not need to create in order to be fulfilled but when God created, it was because he wanted to! Before creation God – Father, Son and Holy Spirit – lived in perfect harmony and happiness. We see this in John chapter one verse 1, where we read: *"In the beginning was the Word* [Christ], *and the Word was **with** God."* The word 'with' here has the idea of 'towards'. It describes a face-to-face delightful relationship where there is perfect intimacy. In creating man and woman God was displaying one monumental act of generosity.

So when the Father through the Son created the huge expanse of the universe and the Earth, and in particular man and woman in his image, it was a staggering act of generosity. He chose to include us in this intimate, delightful relationship that God had enjoyed within the Trinity of Father, Son and Holy Spirit for all eternity. When Paul writes to the Colossian believers that *"all things were created by him and for him"*, he is writing something amazing. For God simply does not need us. The latter-day Puritan theologian Jonathan Edwards writes of God's independence, "…there is an infinite fullness in God, a fullness of every perfection, of all excellence, and beauty, and of infinite happiness." (Edwards 1974).

In his overwhelming generosity God created us that we might share in that happiness. He created us for himself, for his praise and glory, for amazingly he is praised and honoured when we are taken up with him, when we enjoy the intimate relationship with himself for which he created us. It is a wonderful, surprising reality that we shall never fathom, that God our creator takes delight in us his creatures. The Westminster Shorter Catechism starts with this question: "What is the chief end of man?" What is the purpose of our existence? Why did God create us? The Catechism answers: "The chief end of man is to glorify God and to enjoy him for ever." American preacher and writer John Piper has helpfully modified this slightly to: "The chief end of man is to glorify God **by enjoying** him for ever" (Piper 2003). In other words Piper is saying that God's glory and our enjoyment are not two separate things. The more we enjoy God, the more glory we bring to God. For this is why we were created, for God himself, the source of all fulfillment.

We bear, as it were, God's designer label. Not only are we part of God's creation, as Christians we are more importantly part of God's new creation that he is bringing into being through Jesus. It is in Christ alone, through his life, death and resurrection for us that we can enjoy God and bring glory to him. We are people in whom the image of God is shining more brightly each day, as we work through what it means to live with Jesus as Lord.

Worshipping Jesus as Lord means living our lives for his glory, not our glory. It has huge implications for our lives as Christians. This brings us then to our third main point.

3. If all things were created by Jesus and for Jesus, then all that we are and all that we have are to be given up for his glory.

The overriding question of our lives should be: "How can I, with all that I am and with all that I have, glorify God?" It gets really practical. In 1 Corinthians 10:31 Paul says: *"So whether you eat or drink or whatever you do, do it all for the glory of God."*

The basics of life such as food, clothes and a roof over our heads are from him and for him. So a good question to ask is: how can we with our eating habits, the way we dress and the use of our homes bring most glory to God?

Remember that all that you are and have is created **by** him, and **for** him.

Our relationships are also from him and for him. Every relationship we have is with men and women who, like us, God has created in his image, created for his glory. So our overriding desire in our relationships should be to relate to others in a way that brings most glory to God.

Our work too, is from God and for God. Work was a gift that God gave to Adam at creation, before the Fall. While work is now characterised by sweat and frustration, our work is still a gift from God to be used for his glory. So in our working life we seek to bring God glory by living lives of integrity, by witnessing to the truth, by being salt and light where God has placed us and so transforming the organisations and companies we work for.

Our money too is from him and for him. When it comes to our money it is typical for us to think and behave as though Paul really meant *"all things were created by him for us"*. If we are to glorify God with our money, like everything else we have to think carefully about how we are going to do that. A great question to ask is: how can I in my life and in my death use my money for the glory of God in the promotion of the gospel?

Our talents and gifts too are from him and for him. So our concern ought to be to use our talents and gifts in such a way that people honour God rather than us.

Our time also is part of God's good creation – from him and for him. So our concern here ought to be to use the moments of each day for his greatest glory.

Remember that all that you are and have is created **by** him, and **for** him. In the words of the songwriter Paul Oakley:[1]

It's all about you, Jesus,
And all this is for you,
For your glory and your fame;
It's not about me,
As if you should do things my way–
You alone are God
And I surrender to your ways.

Footnote

[1] Jesus, lover of my soul. Paul Oakley (Kingsway Music, 1995).

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Life in a cake mixer

Edgar Andrews

Paramecium, a so-called 'simple' life form – but still as special as ever! © Nancy Nehring, www.istockphoto.com

"The life-giving miracle of Dr Venter", screamed the headline (*The Times*, 26th January, p.32). Along with other news reports, the article hailed the recent announcement that US scientist Craig Venter and co-workers had completed the laboratory synthesis of a bacterial DNA sequence containing over 580,000 base-pairs.

So, what are base-pairs? They are the four different chemical groupings that constitute the 'letters' in the 'alphabet' used by the genetic code. The English alphabet has 26 letters but the genetic alphabet has only four, each consisting of a given base-pair.

Just as the sequence of letters in a word or sentence spell out a meaningful message, so the sequence of base-pairs spells out (and preserves) the information needed by an organism to live, grow, function and reproduce.

(To avoid any confusion, please note that biologists use 'letters' to denote the four *individual* nucleotide bases A, G, T and C. Any three such bases in sequence form a codon that specifies a given amino acid during protein synthesis).

More soberly, the article continues: "Although the synthesis of the DNA of *M. genitalium* [the bacterium in question] represents a technical *tour de force* ... it represents no fundamental breakthrough, technologically. It is not the first living DNA to have been synthesised artificially".

Life created?

The Guardian (6th October 2007) was less guarded! It declared: "Craig Venter, the controversial DNA researcher involved in the race to decipher the human genetic code, has built a synthetic chromosome out of laboratory chemicals and is poised to announce the creation of the first new artificial life form on Earth...

"Mr Venter told the Guardian he thought this landmark would be 'a very important philosophical step in the history of our species. We are going from reading our genetic code to the ability to write it. That gives us the hypothetical ability to do things never contemplated before'."

So, have these researchers created artificial life?

Well, actually, no. They have simply *copied* the DNA sequence from an existing natural organism. I could copy one of Einstein's scientific papers word for word and submit it for publication as my own work, but I doubt whether I would receive credit for creating something that didn't already exist (which is, after all, what 'creating' means).

This is not to deny that the synthesis is a genuine scientific achievement or that great skill was required to accomplish it. It is simply saying that nothing has been 'created' – only copied.

To claim that "we are going from reading our genetic code to the ability to write it" is completely misleading. If I copy out the words of a Shakespeare sonnet, in what sense have I 'written' them? A photocopier could do the same. I would certainly not have 'written' the sonnet – nor would I have created anything other than marks on a piece of paper.

Life in a cake mixer

Returning to the *Times* article, we are also told that chemistry has abolished the idea that life is something special:

Despite bold claims, life has not been artificially created in the laboratory. © Christine Balderas, www.istockphoto.com

"Dr Venter ... is simply the latest in a long line of biochemists who have punctured life's claims to specialness. Until 1828 it was believed that life, with its so-called 'vital forces', owed nothing to science..."

The idea being promoted here is that life is simply complex chemistry, nothing more. That is why (they say) life was able to evolve by the chance combination of ordinary non-living chemicals.

There are two basic fallacies with this 'reductionist' approach to life – so beloved of evolutionary philosophy.

Firstly, the chemical *tour de force* demonstrates that to produce a meaningful string of DNA requires a lot of hard work by highly skilled and intelligent chemists. No one suggests that Dr Venter and his team simply poured the necessary chemical ingredients into a cake mixer, set it on automatic and took a vacation.

And that is just to *copy* a DNA molecule. To create the first such molecule from scratch would, I suggest, have required an infinitely greater input of intelligence. It simply is not enough to claim that the cake mixer actually *will* produce a 'life-giving miracle' as long as you run it for a thousand million years or so. Yet that is what evolution claims.

Life is information

The second fallacy in claiming that life is nothing but chemistry is even more nonsensical. It is true that science has removed the need for a mystical 'vital force' to explain why life is special. But what they don't tell you is that science has replaced 'vital force' by something even more amazing – organised information!

It is perfectly possible to string base-pairs together randomly in a way that spells out biological 'nonsense', but such a pseudo-DNA molecule would not support life. So it is not the *chemistry* of DNA that constitutes life but information – the meaningful sequence of base-pairs that spells out instructions that the living cell can read, interpret and use.

Life, therefore, consists not in molecular chemistry but in the *information stored* by the molecular chemistry – which is altogether different.

This article could be stored in many ways – words printed on paper, magnetic 'marks' on a tape, microscopic pits on a CD, or even radiowaves endlessly carrying their sounds. The media on which the words are stored are necessary but they are *not* the information that constitutes the message. The same media could be used to store a meaningless jumble of letters!

Life is still as special as it ever was because it consists of information, not chemicals. So don't be misled by "science falsely so called". ■

This article is reprinted from Evangelical Times *(March 2008), with kind permission of the editors. Readers can obtain more information by writing to:*

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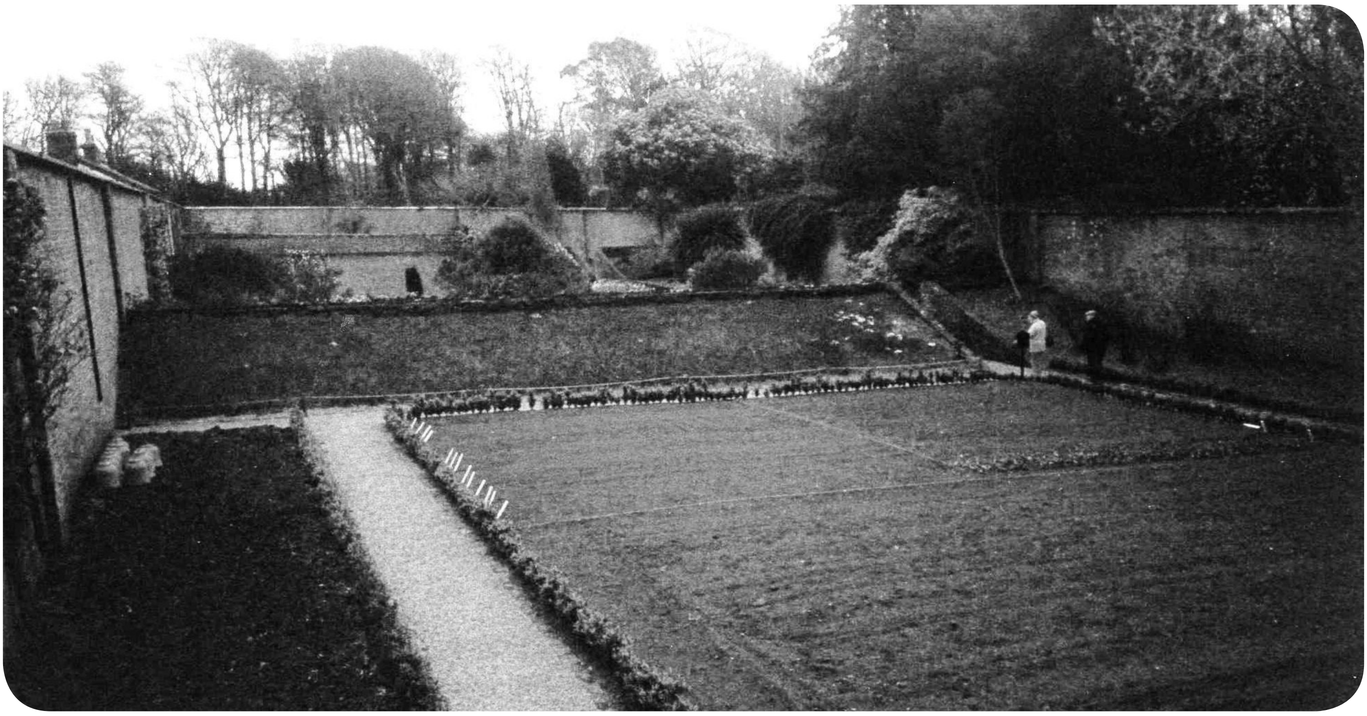
Noah's Ark was BIG!

Ruth Ward



A view across one of the five walled sections of the kitchen garden at Trengwainton. © Ruth Ward.

Science writers often ridicule the biblical account of Noah's Ark, saying it would be impossible to fit all the animals inside it.

[Overlooking creation models, Allaby and Lovelock (1985, p.15), for instance, wryly claim:

> *"His ark would have had to find room for something like 1 million species of insect, 25,000 species of bird, 2,500 species of amphibians, 6,000 species of reptiles, and several thousand species of mammals, not to mention cultures of tens of thousands of species of microorganisms, all identified without the aid of a microscope."*

– Ed.]

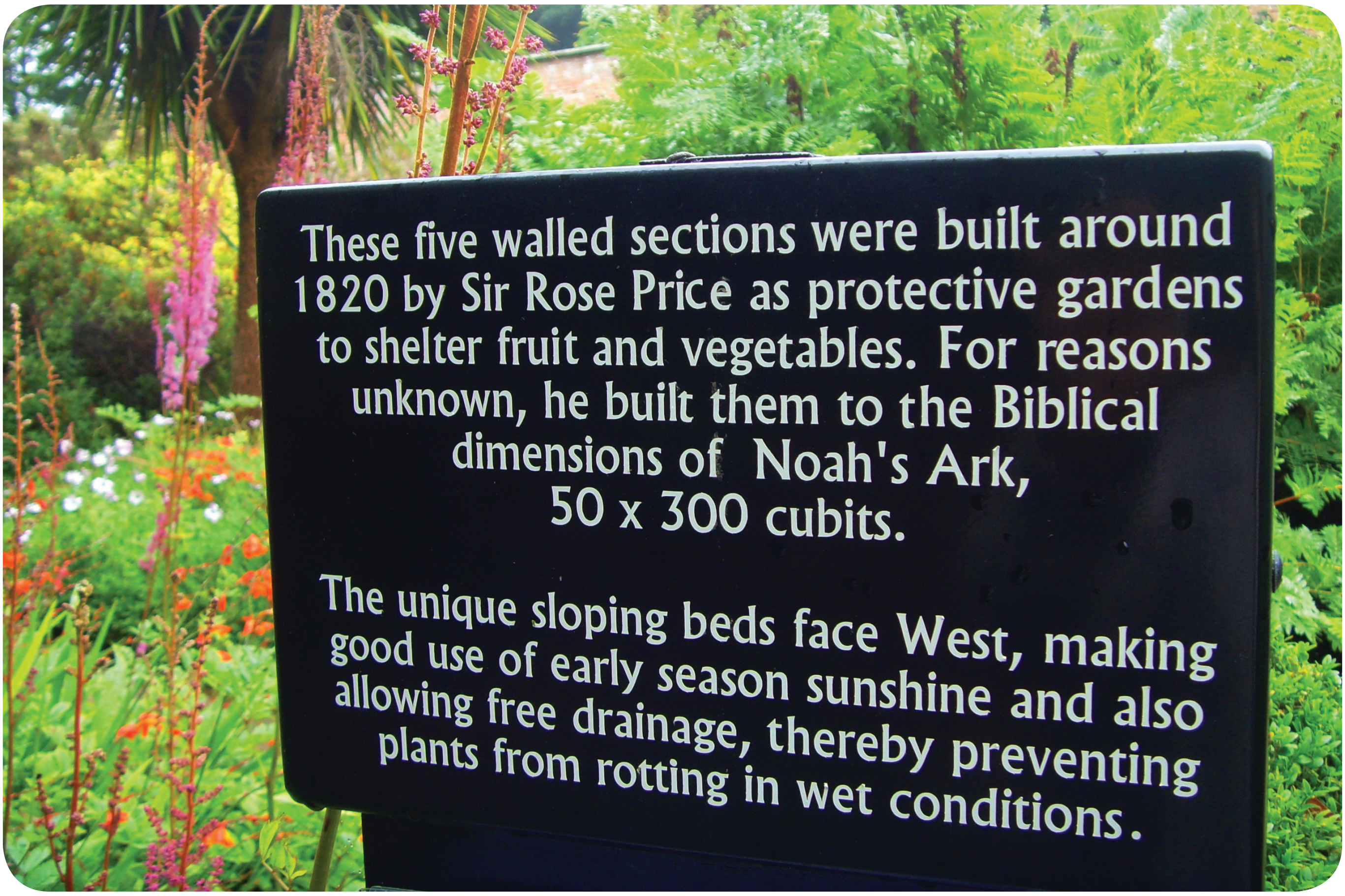
In children's pictures of the Ark, similar sarcasm is expressed, and artists usually depict it with animal heads sticking out of the windows and the roof.

The dimensions given in Genesis 6:15 (300 cubits long and 50 cubits wide) can be hard to visualise, even when converted into modern SI units – at least 135 by 22.5 metres, reckoning a cubit as around 45 cm (17 in).

Now, however, visitors to the beautiful National Trust Garden at Trengwainton, near Penzance, Cornwall, UK, can see for themselves just how vast an area that is. The Georgian kitchen garden there, surrounded by high brick walls, is divided into five sections of equal size (see photograph above). The man mainly responsible for shaping this garden, in the 1800s, was Sir Rose Price who, "...from records of his regular correspondence with another local dignitary, was known to be a deeply religious man. Archives show that it was well known locally that the walled garden was built to the dimensions of Noah's Ark as stated in the Bible. When the walled kitchen gardens are measured, they do indeed match these dimensions." [1]

As the 1st Baronet Price of Trengwainton, Sir Rose was the son of a wealthy Jamaican sugar planter. He created the walled garden at the foot of the drive from the house in 1814, using

Tree growing in Trengwainton Garden. © James Powell, 2008.



These five walled sections were built around 1820 by Sir Rose Price as protective gardens to shelter fruit and vegetables. For reasons unknown, he built them to the Biblical dimensions of Noah's Ark, 50 x 300 cubits.

The unique sloping beds face West, making good use of early season sunshine and also allowing free drainage, thereby preventing plants from rotting in wet conditions.

Information sign at Trengwainton Garden. © James Powell, 2008.

Floral displays in Trengwainton Garden. © James Powell, 2008.

Information sign at Trengwainton Garden. © James Powell, 2008.

The rainbow reminds us that God has promised to never again destroy the Earth with a flood.
© Amygdala, www.istockphoto.com

brick, a warmer but more expensive material than the local granite. This was no mean feat. A kiln had to be purchased to fire the brick on site, and two shiploads of materials had to be transported all the way from Somerset! Inside these walls he built a series of compartments with raised beds, angled towards the winter sun. Although similar beds were built in other gardens, those at Trengwainton are believed to be the last remaining of their kind. The raised beds enabled early crops of vegetables to be produced and tender plants to be grown.

On discovering the significance of the dimensions of the whole walled garden, the National Trust has erected a wooden viewing platform near the top of one of the walls, which enables visitors to view the dimensions of the whole and to see just how huge Noah's Ark really was! In the photograph on page 19, the distance to the sloping bed is one fifth of the total length. There are three more areas of the same size beyond it and one behind the photographer. Visitors can wander round the whole area and imagine for themselves just how many animals could be fitted into that expanse.[2] There is no doubt about it – Noah's Ark was BIG! ■

Footnotes

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1. Information obtained from the National Trust Administrator of Trengwainton Garden.

2. The Garden is accessible between 10.00 am and 4.30 pm (except Fridays and Saturdays) during opening season. Telephone 01736 363148 for information. Email Trengwainton@nationaltrust.org.uk.

Reference

Allaby, M. and Lovelock, J. (1985). *The Great Extinction: What Killed the Dinosaurs and Devastated the Earth?* Paladin Books, London.

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> There is no doubt about it – Noah's Ark was BIG!

DVD Review
The Nativity Story

Written by Mike Ritch
Produced by Wyck Godfrey and Marty Bowen
Directed by Catherine Hardwicke
Production Company: New Line Home Entertainment
DVD release date: November 2007
Duration: 97 minutes

Reviewed by James Powell

The events surrounding the birth of the Lord Jesus Christ – our Creator made flesh! – are some of the most remarkable in the whole of Holy Scripture. A little over two thousand years ago, much of the Jewish Nation were expectant of a Messiah who would arise to liberate them from Roman oppression and reign as Israel's true King. Believers among their number may have also understood from the Old Testament that the promised Messiah would have an everlasting dominion, ruling a Kingdom which was not of this world. If they were careful students of Scripture, however, they may have realised in addition that since the beginning of creation, the Lord God had promised Adam and Eve that the "seed of the woman" should crush the Serpent's head (Genesis 3:15). In fact, this promised Messiah would be very God, being called "…Wonderful, Counsellor, The mighty God, The everlasting Father, The Prince of Peace" (Isaiah 9:6); and "Behold, the days come, saith the Lord, that I will raise unto David a righteous Branch, and a King shall reign and prosper, and shall execute judgement and justice in the earth. In his days Judah shall be saved, and Israel shall dwell safely: and this is his name whereby he shall be called, THE LORD OUR RIGHTEOUSNESS" (Jeremiah 23:5-6).

Within this Old Testament context, we come to The *Nativity Story*, released in 2007 on DVD. What are we to make of this film? Could it be used as an opportunity to present the gospel? The film itself is very well shot, skilfully acted, and has some stunning set-pieces. No expense has been spared to make the costume design and scenery as authentic as possible. In this sense, we can regard the film much as we do the Apocrypha – useful as a historical aid but by no means God-breathed. Premier Radio has further described the film as "…compelling…", yet upon closer inspection a number of problematic issues do arise which we would all do well to remember.

First, the film obviously culminates with representations of the Lord Jesus as a baby. Whilst this may seem innocent to some, as in school plays, it nevertheless breaches the second commandment which tells us not to make any representations of God whatsoever. Second, the film does not set the birth of our Lord Jesus within the context of creation or any other Old Testament event. A single passage, Jeremiah 23:5-6, is the only prophecy that the producer has seen fit to include toward the beginning. This robs the account of its true significance, which we find explained in passages such as John 1. Third, some of the wonderful sayings found within Scripture have been omitted altogether from this production. Mary, when greeting Elizabeth, fails to deliver the words found in Luke 1:46-55. Furthermore, Zachariah's song (found in Luke 1:68-79) has been completely removed. This is an enormous shame, because these passages reveal that Mary considered herself in need of a personal Saviour and that Zachariah had grasped that the "Sun-rising from on High" (promised from "since the world began") had been manifest in human form. As a fourth point, the film suggests that angelic beings transmogrify into birds, which has no biblical warrant whatsoever. And fifth, the film glosses over the Temple scene with Simeon and Anna the Prophetess, possibly leading to confusion as to the order of Scriptural events. Other instances could be produced to demonstrate the failings of this production, yet these should suffice to give some appreciation of the problems it presents.

In conclusion, whilst this film is fascinating, thought-provoking, and in some places inspiring, it is not entirely faithful to the gospel accounts and can only be suggested viewing for knowledgeable Christians who will discern its many shortcomings. If it were shown to non-Christian friends as a conversation starter, then other Scriptural events from creation to consummation would be vital teaching points both before and after the feature. Scripture, after all, is our God-given means to present the gospel – for "faith cometh by hearing, and hearing by the word of God" (Romans 10:17). ■

“the word”:

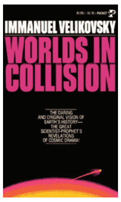
Your Correspondence

Impact events have evidently played a major role in Earth history, although creationists debate exactly when they occurred. © Solar Seven, www.istockphoto.com

Rev. Martin Down, Swaffham, Norfolk

Reading William Worraker’s article, ‘Violence in netherland’ in *Origins* 46, I was led to wonder whether anyone today takes seriously the theories of Immanuel Velikovsky.

Velikovsky wrote books in the 1950s such as *Worlds in Collision*, *Earth in Upheaval*, and *Ages in Chaos*, in which he developed the theory that in historical times the planet Jupiter ejected a solid body, which, after traversing the solar system, finally settled into a regular orbit round the Sun as the planet Venus.



Drawing on the folklore and literature of many ancient peoples, including the Old Testament, Velikovsky argued that mankind retained a collective memory of violent catastrophes that had affected both the heavens and the Earth. In the Old Testament, he associated the parting of the Red Sea during Israel’s Exodus from Egypt, and the Sun standing still for Joshua in the valley of Aijalon, with celestial and terrestrial disturbances caused by the near passage of the future planet Venus. Strangely, perhaps, Velikovsky did not associate these celestial events with the cause of Noah’s Flood.

Velikovsky’s work led to the formation of the Society for Interdisciplinary Studies, for his theories drew on many different branches of knowledge, archaeology and anthropology, physics and astronomy, geology and cosmology. Incidentally his theories involved redating ancient Egyptian history in order to produce a better synchronisation with the history of Israel in the Old Testament.

As far as I am aware none of Velikovsky's ideas were taken up by mainstream scholars. There were flaws in his work: some, flaws of ignorance; others, it seems, more deliberate bendings of the facts to fit the theory. And yet, there is something of a ring of truth about the basic theory. It does, for instance, account for the ancient myth of the birth of Venus, and for astronomical phenomena such as the red spot of Jupiter and the retrograde rotation of Venus. Certainly, the more one thinks about the upheavals on Earth that must have accompanied the Flood, the more it appears possible that some such planetary disturbance could, at the natural level at least, have been the cause.

I wonder how many creationists are familiar with the work of Immanuel Velikovsky and if anyone thinks there might be anything in his ideas from a creationist point of view?

William Worraker replies:

Thank you for mentioning the work of Immanuel Velikovsky. I am indeed familiar with his theories and the subsequent furore, and am aware of the Society for Interdisciplinary Studies. I believe other creationists, including members of the *Origins* editorial committee, are also familiar with Velikovsky and his legacy.

To me Velikovsky's theories hardly bear scrutiny either from a biblical or scientific viewpoint. However they contain some valuable insights, and some of his ideas have proved robust. Most strikingly, catastrophism as a key concept in understanding Earth history is now mainstream science – though of course catastrophic events are generally placed well in the distant past (e.g. at the end of the Cretaceous, 65 million years ago in the evolutionary timescale). A biblically-based view of geology and human history necessarily also involves a major element of catastrophism, notably in the Genesis Flood. The events recorded in Joshua 10:11-14 (which were important to Velikovsky) are another case in point, apparently implying catastrophism of extraterrestrial origin. Note, however, that timescales in Scripture are much shorter than in conventional reckoning.

Velikovsky drew heavily upon ancient legends as well as Scripture for information to support his reconstructions of past events. Unfortunately he was both uncritical and selective in doing this, and consequently received much academic scorn. I believe it is legitimate and indeed profitable to make use of ancient legends, which doubtless contain genuine memories of major natural events impacting whole communities, sometimes even the whole human race. However nothing should be accepted uncritically, since ancient legends are subject to varying degrees of corruption and embellishment. Our resulting histories must be both coherent and consistent with the relevant biblical and scientific data.

Velikovsky's legacy continues today through the myriad publications on 'alternative history' found in many high street bookshops. Creationists should exercise great caution with these, as the underlying scholarship is likely to be unreliable. ■

Daniel Sutherland, Edinburgh, Scotland

It's not my habit, you'll be aware, to criticise articles in *Origins*. But after reading William Worraker's item about Kuiper Belt Objects in issue 46, I am at a loss to understand how he makes the leap from distant violent collisions in space to God's judgements regarding sin on Earth. No logic is offered, merely the purely speculative word "*may*". And as for it being judgement *during* Creation Week, what about God's "good/very good" assessment? Such baseless speculation only feeds the 'non-science' view of creationism by such as the BBC *et al*.

William Worraker replies:

'Violence in netherland' was not intended to justify linking a damaged solar system with God's past judgements on mankind, for which readers can consult the references listed in footnote 3 (notably Hartnett 2003). My own approach to the question of this link is twofold:

1. Consider the relevant Scriptural principles. These include 2 Peter 3:5-7 (the Flood warns us of judgement to come), Joshua 10:11-14 (the Lord unleashed great stones from heaven and apparently disturbed the Earth's motion in order to help Israel in battle and judge her enemies), Romans 8:20-22 (the whole creation is "groaning" and in "bondage to decay" because of God's judgement upon sin) as well as Genesis 6-9 (the Flood).

2. Evidence of past violence must fit somewhere in the timeline of Scripture. The most natural point is the Flood, since water from the "floodgates of heaven" (Genesis 7:11) probably came from space, carried by comets and asteroids; a concentrated bombardment by such would probably have scarred everything in the inner solar system apart from the Sun. Scientifically, then, a coherent model of how this occurred is needed. This would involve investigation of the planetary cratering record, the physical cause of the original disturbance (e.g. an exploding planet or planets), orbital calculations, and so on, as well as careful study of the relevant biblical data.
   Another possibility is the Fall, when the whole creation was cursed by God (Genesis 3:17,18). However in this case I am not aware of biblical data relating to large-scale violent events or to "the heavens". Thus it is hard to see how past violent events can be directly related to the Fall.

I apologise that the mention of Creation Week gave the unintended impression that I thought some form of judgement may have taken place then. The idea that has been proposed is that part of the process of creation involved violent events, e.g. the bombardment of the moon, resulting in numerous craters (Faulkner 1999). On this basis some impact features would relate to creation, and some to judgement. The difficulty is in distinguishing between these possibilities, for which we have no clear *a priori* criterion. The best we can do is to compare the solar system impact record with a range of dynamical models subject to biblical guidelines (e.g. relatively short timescales, the Flood critically important in terrestrial geology, etc), and to investigate and develop further the most promising scenarios.

I am hoping to undertake a programme of work to investigate all of these questions in some detail, and would be interested to hear from other readers with a similar interest. Furthermore if

Craters on the Moon. This colour image was taken by the Galileo spacecraft in 1990 at a range of about 350,000 miles. The concentric, circular Orientale basin, 600 miles across, is near the centre. The lower left shows the southern cratered highlands of the far side. © 2008 JPL/NASA.

Daniel Sutherland wishes to pursue these matters further he may contact me through the editors of *Origins*. ■

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Andrew Jackson, York

Dr John Peet goes too far in his article 'The doctrine of the last things' (*Origins* 48) in stating, "We cannot claim to be evangelical in theology and believe in molecules-to-man evolution…".

It is one thing to argue in the strongest terms that we are right and others are wrong, but it is censorious and uncharitable to try to discredit and marginalise our opponents through the use of emotive religious labels, especially when used inaccurately. Although just a word, it is also a shibboleth, and as such should be used carefully and appropriately.

The term 'evangelical', as I'm sure Dr Peet realises, refers primarily to doctrines concerning the nature of the Godhead, the authority of Scripture, salvation by grace alone, etc. Would Dr Peet say that those who differed with him over matters of baptism, church governance, sovereignty of God, eschatology, etc. were also not evangelical, even though they might each believe in the sufficiency, infallibility and inerrancy of Scripture? I hope not!

Yes, some theistic evolutionists, I'm sure, are not evangelical, and would be the first to admit it. But a little wider reading will show that there are also many who do take the Scriptures very seriously but come to a different conclusion.

So let's continue the debate in love and humility (cf. Anthony Bush's excellent closing comments on page 19 of the same journal), but let's stop the name-calling, or at least get it right!

John Peet replies:

I thank Mr Jackson for his letter following my article on doctrine and I must apologise if my comment came across in such a censorious manner as he describes. As those who have heard me speak will know, I always seek to treat those of differing opinions with respect. I am not attacking the Christian faith of such folk as I refer to, but rather their position. I know that often these fellow Christians claim to be evangelical but, as I am sure Mr Jackson must recognise, this has today become a description that lacks clear definition as other writers have demonstrated. I would refer to the writings of such as the late Dr Martyn Lloyd-Jones' *What is an Evangelical?* (1992, pp.74-82) in which he emphasised the historicity of Adam and the Fall as non-negotiables.

Mr Jackson lists some of the classical features of evangelical doctrine and I would not dispute them, but I would respectfully question whether these are features that reflect the theological position of those who take the molecules-to-man position. This was seen in a recent conference which some of us attended. For example, on the matter of the authority of Scripture, what does that mean? We were told that it was on a par with the authority of scientists. Evangelicals hold to the supreme authority of Scripture.

This, in turn, has far-reaching implications. These issues will be picked up in a review of a recent theistic evolutionary publication by Dr Denis Alexander. In order to accommodate evolutionary principles, Dr Alexander seems to me to play fast and loose with Scripture. The origin of man is not as recorded in Scripture and is completely rewritten. Similarly, the origin of physical death as a judgement for man's sin, and so the Scriptural statement that "Christ died for our sins". What concerns many of us is that this undermines the gospel message. I acknowledge freely that Dr Alexander is a Christian and is concerned to preach the gospel, but these interpretations cannot be described as evangelical theology, though our brother does claim to be evangelical.

I trust that this clarifies the comment made in my article. ■

Reference

Lloyd-Jones, D.M. (1992). *What is an Evangelical?* The Banner of Truth Trust, Edinburgh.

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Tree growing in Trengwainton Garden.
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